

RAIVIO et al. — Appln. No. 09/787,669
Client/Matter: 060258/0277936

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A connection establishment method in a wireless telecommunications system including a radio network layer associated with carrying radio network-specific signalling and a transport layer associated with establishing user connections over a transmission system between network nodes in the telecommunications system, the method comprising:

requesting, via the radio network layer, the transport layer to establish a user connection between network nodes;

carrying out a transport layer signalling procedure to establish a transport layer connection;

carrying out a network layer signalling procedure to establish a radio network layer connection;

providing binding information associated with the user connection requested by the radio network layer;

utilizing the binding information in the transport layer signalling procedure;

utilizing the binding information in the radio network layer signalling procedure; and

utilizing in the network nodes, the binding information to associate the transport layer signalling procedure and connection with a corresponding network layer signalling procedure and connection.

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2. (Previously Presented) The method of claim 1, wherein the binding information is provided to the radio network layer via the transport layer.

3. (Previously Presented) The method of claim 1, further comprising dynamically allocating, via the transport layer, the binding information to each connection to be established by signalling.

4. (Previously Presented) The method of claim 1, further comprising ending the radio network layer signalling procedure via a request complete message only after completion of the transport layer signalling procedure and establishment of radio resources and transport resources.

5. (Currently Amended) The method of claim 1, further comprising:
allocating the binding information only in one of the network nodes associated with the user connection; and
sending the allocated binding information to another one of the nodes associated with the user connection in at least one of a radio network layer message and a transport layer message.

6. (Previously Presented) The method of claim 5, further comprising allocating the binding information in terminating one of the network nodes associated with the user connection.

7. (Previously Presented) The method of claim 1, wherein the allocated binding information is unique at least between the network nodes associated with the user connection.

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8. (Previously Presented) The method of claim 7, wherein the binding information includes a node identity.

9. (Previously Presented) The method of claim 1, further comprising:
checking, in at least one of the network nodes associated with the user connection, whether there is a pool of permanent transport layer connections between the network nodes;
allocating to the requested user connection one permanent connection from the pool instead of establishing a signalled connection by the transport layer signalling procedure;
informing the binding information associated with the allocated permanent connection to the radio network layer;
receiving, in another one of the network nodes associated with the user connection, the binding information from the radio network layer, the binding information being carried from the one network node to the other network one of the nodes in the radio network level signalling;
allocating, in the other one of the network nodes associated with the user connection, for the requested user connection, the permanent connection associated with the binding information; and
utilizing in the nodes the binding information to associate the permanent transport layer connections with corresponding network layer signalling procedures and connections.

10. (Previously Presented) A wireless telecommunications system comprising:
including at least two network nodes configured to be connected via at least one user connection,
wherein:

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the at least one user connection is established via a transport layer and radio network-specific signalling is carried via a radio network layer,

radio network layer signalling procedures are substantially separated from transport layer signalling procedures,

one of the network nodes is configured to provide binding information associated with a user connection requested by the radio network layer, and

both the radio network layer and the transport layer are configured to use the binding information in signalling associated with network node connection establishment to enable network nodes connected via a user connection to associate transport layer signalling and connections with corresponding network layer signalling and connections.

11. (Previously Presented) The system of claim 10, wherein at least one of the network nodes connected via the user connection is configured to dynamically allocate the binding information associated with that user connection.

12. (Previously Presented) The system of claim 11, wherein the at least one network node associated with the user connection is configured to send the dynamically allocated binding information to the other one of the nodes connected via the user connection in at least one of a radio network layer message and a transport layer message.

13. (Previously Presented) The system of claim 12, wherein the node configured to send the dynamically allocated binding information is a terminating node.

14. (Previously Presented) The system of claim 10, further comprising:

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permanent transport layer connections between some of the network nodes, each permanent connection being fixedly associated with preallocated binding information,

wherein, the network nodes connected to permanent transport layer connections are each configured to store reference information associating the preallocated binding information with the associated permanent connection, and wherein the nodes connected to permanent transport layer connections are configured to use the permanent connections based on availability criteria.

15. (Currently Amended) The system of claim 10, wherein a transport technique associated with the transport layer is one of Asynchronous Transfer Mode, Internet Protocol, Frame Relay, ~~or~~ and Time Division Multiplexing.

16. (Previously Presented) The system of claim 10, wherein the binding information is unique at least between two network nodes associated with a user connection.

17. (Original) The system of claim 14, wherein the availability criteria dictates always using the associated permanent connection when the permanent connection is available.

18. (Original) The system of claim 14, wherein the availability criteria dictates using the associated permanent connection when preferable according to a predetermined criterion.

19. (Original) The system of claim 14, wherein the availability criteria dictates using the associated permanent connection when no signalled connections are available.

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20. (New) A network node for a wireless telecommunications system including a radio network layer associated with carrying radio network-specific signalling and a transport layer associated with establishing user connections at a radio network layer level and at a transport layer level, respectively, over a transmission system between said network node and another node in the telecommunications system, signalling procedures of the radio network layer being substantially separate from signalling procedures of the transport layer, wherein

said network node is configured to provide to, or obtain from, the other network node binding information associated with a user connection requested by the radio network layer, said binding information associating a particular transport layer instance with a corresponding radio network layer instance, and

said radio network layer and said transport layer at said network node are configured to use the binding information in signalling associated with the connection establishment and to exchange it between each other in order to enable said network node and said other node at the ends of the user connection to associate transport layer signalling and connections with corresponding network layer signalling and connections.

21. (New) The network node of claim 20, wherein said network node is configured to dynamically allocate the binding information for each user connection.

22. (New) The network node of claim 20, wherein said network node is configured to send the binding information to the other node in at least one radio network layer message or transport layer message.

23. (New) The network node of claim 22, wherein said network node comprises the terminating one of the two nodes.

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24. (New) The network node of claim 20, wherein said network node is arranged to obtain the binding information from the other node in at least one radio network layer message or transport layer message.

25. (New) The network node of claim 20, comprising at least one permanent transport layer connection to the other network node, the at least one permanent connection being fixedly associated with preallocated binding information, said network node being further configured to store reference information tying the preallocated binding information to the respective permanent connection, and to use the at least one permanent connection based on one or more of the following criteria: always when available, when preferable according to a predetermined criterion, and when no signalled connections are available.

26. (New) The network node of claim 20, wherein a transport technique associated with the transport layer is one of Asynchronous Transfer Mode, Internet Protocol, Frame Relay, and Time Division Multiplexing.